CHAPTER I

I. INTRODUCTION

Lakes are important resources in New Hampshire. They provide enjoyment in fishing, swimming, and boating and they enhance the beauty of the natural environment. Their value for tourism amounts to many millions of dollars each year. The recreation and tourism industry in New Hampshire plays a vital role in many communities and in the state economy. However the increased intensity of use of these water bodies has resulted in the aesthetic degradation of many lakes throughout the state. The same persons that had been attracted to these lakes and ponds because they were clean and clear, and tranquil are now complaining of diminished quality as well as overdevelopment.

To accomodate this growth in lake use, lake and watershed management has become increasingly important in the last twenty years. Limnologists are now trying to educate the public on the importance of lake preservation before the resource is destroyed and it becomes necessary to spend thousands of dollars on lake restoration.

The Webster Lake/Sucker Brook Study began in October of 1987 as a result of a section 314, Clean Lakes Program grant. The project has afforded limnologists the opportunity to study and to better understand Webster Lake and the Sucker Brook subwatershed.

The Webster Lake Watershed spans two municipalities in the south-central portion of the Lakes Region of New Hampshire. The total watershed consists of approximately 11,432 acres and contains two major lakes, numerous small ponds and an extensive system of tributaries. The majority of the watershed - 8,363 acres (73.2 percent of the total basin) - is in the eastern portion of the town of Andover, New Hampshire. The watershed can be considered typical of the Lakes Region of New Hampshire. Vast forested areas and agricultural corn fields are broken only by scattered single-family dwellings which parallel existing road networks, and are concentrated in typical "village" layouts.

The watershed is dominated by Highland Lake in Andover, and Webster Lake in Franklin. The two lakes are connected by Sucker Brook, the largest of the many tributaries within the watershed. Webster Lake (612 acres) is the larger of the two lakes, being 1.6 miles in length by 1.0 miles wide.

Presently, approximately 90% of the 4.3 miles of Webster Lake's shoreline is developed. The lake is subject to extensive recreational use. The lake, at an elevation of 401 feet above sea level, has an average depth of 19 feet, a maximum depth of 45 feet, and has two public beaches and one public launch.

A priority list developed by the Department of Environmental Services' Biology Bureau has rated Webster Lake as high for both restoration and preservation. The lake is located within 25 miles of the capital city of Concord and is also within 25 miles of the City of Laconia.

The trophic classification of Webster Lake was determined to be mesotrophic, based on data collected and a comparison with the Trophic Classification System for New Hampshire Lakes and Ponds. These guidelines were formulated to classify New Hampshire lakes and ponds for the federal "Clean Lakes" program. A total of six points were awarded to Webster Lake based on this rating system. This ranked Webster Lake as number 24 on the priority list for restoration.

An earlier Water Quality Management Investigation of Webster Lake in 1980, revealed that Sucker Brook, the main tributary to Webster Lake, accounted for approximately 67% of the total water input to the lake, drained about 80% of the entire watershed area and was responsible for approximately 63% of the phosphorus loading to the lake during a normalized year.

Most of the focus of attention in this study is the Sucker Brook subwatershed. The goal of the diagnostic study was to determine the phosphorus budget of Sucker Brook and depict the problem areas along the brook that are contributing significant sources of phosphorus to Sucker Brook and impacting the quality of Webster Lake. The goal of the Feasibility Section is to describe some of the methods that can be utilized to preserve and, if necessary, restore the lake. The Feasibility Section ultimately recommends the most cost-effective means to improve and protect Webster Lake.

The implementation of these recommendations will be dependent upon the initiative of state and local government, the citizens of Andover and Franklin, and the shoreland property owners of Webster and Highland Lakes. Cooperation will be a key element in establishing the implementation goals. One of the greatest challenges, that of working together to meet our water quality goals, still lies ahead.